



We still have room to improve heifer raising



THE National Animal Health System (NAHMS) has done U.S. national dairy industry surveys and published results most recently in 2002, 2007, and 2014 with some lag between the years in which data were collected and when they were published.



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In addition, there were some separate calf surveys done in 1991 and 1993.

However, the last two NAHMS surveys have incorporated more questions related to calves and heifers. Consequently, it was like a bonus when a separate heifer calf survey was done and published in a sequence of six articles in the October 2018 *Journal of Dairy Science*. In this article, I will extract and analyze some data from that survey as it related to feeding and management of calves.

The survey was done from March 2014 to December 2015 with 104 dairy operations in 13 U.S. states. There were 2,545 heifer calves included with 89 percent being Holsteins. Of the database, 75 percent were born from unassisted calvings and 97 percent were singleton births.

Herds surveyed were categorized as small with 30 to 99 cows on 21 operations with 14 percent of calves; medium-sized farms with 100 to 499 cows on 33 operations with 27 percent of calves; and large-sized farms with 500 plus cows on 50 operations with 59 percent of calves. Of that group, 75 percent of operations were from the Eastern region.

Where we are now

Overall, morbidity or sickness rate was 38 percent. Fifty-six percent of those calves had digestive or scours issues, and 33 percent were desig-

nated with respiratory illnesses. It was indicated that overall mortality was slightly lower compared to previous studies, but the study did not note 2014-2015 levels. Of all calves, 87 percent were individually housed, 67 percent were bedded with straw or hay, 31 percent with shavings or wood chips, and 5 percent with sand.

At an average of 28 days of age, calves were dehorned.

How we feed

After birth, 20 percent of calves were provided pooled colostrum, less than 7 percent of calves were provided heated colostrum, and 22 percent of calves suckled colostrum from their dam. For 24 percent of calves, colostrum was fed after a Brix refractometer reading, and 77 percent of calves received greater than 50 grams of immunoglobulin G per liter (IgG/L) of colostrum.

The average time after calving for first colostrum feeding was 2.8 hours, and the average amount colostrum fed at first feeding was 2.9 liters with a total of 4.5 liters fed within the first 24 hours of life. Average serum total protein (STP) was 6 grams per deciliter (g/dL) and the calves averaged 90 percent passive transfer. For colostrum administration, 81 percent of calves were bottle fed while 35 percent of farms esophageal tube fed and 11 percent used both.

Mean colostrum IgG was 74.4 grams per liter (g/L), and 77 percent of colostrum had greater than 50 g/L. Colostrum IgG was 72.6 g/L when the THI (temperature humidity index) was less than 40 (cold stress) and 64.2 g/L when THI was greater than or equal to 70 (heat stress). Of all calves, 12 percent had less than 10 IgG g/L, but the authors recommended a minimum of 15 IgG g/L, which 73 percent of calves achieved.

Colostrum IgG levels were similar for first, second, and unknown lactation cows, but about 10 percent

greater for third lactation herd-mates. When calves received heat-treated colostrum (only 6 percent), they had serum levels of 24.1 versus 20.5 IgG g/L. Colostrum was fed to 63 percent of calves by bottle, 10 percent by esophageal tube feeder, and 24 percent allowed calves to suckle from their dam.

Calves were first fed water at 8 days of age, first fed starter at 5 days, and first fed hay at 27 days. These numbers are better than for the 2007 and 2014 NAHMS surveys, but they still reflect dairy farmers are waiting too long to begin feeding water and starter. On the flip side, hay feeding was begun before recommendations. Average age at weaning was 65 days.

When it came to feeding, 40 percent of calves were fed whole or waste milk (31 percent pasteurized) 35 percent milk replacer, and 25 percent were fed both. Thirty-nine percent were bottle fed, 17 percent bucket fed, 5 percent bar fed, and 3 percent robotic fed. When looking at feeding frequency, 12 percent of farms fed at least some calves once daily, 91 percent fed at least some twice daily, 18 percent three times daily, and 12 percent robotic/ad libitum fed.

Most farms fed milk replacers (MR) with 22 percent protein, 20 percent fat, and 0.29 pound solids per feeding. They fed an average of 2.5 liters (2.64 quarts) per feeding for 65 days for a total of 350 liters (370 quarts) total fed preweaning. Starters averaged 19.8 percent protein.

Weaning was done based on starter intake on 50 percent of surveyed operations, while 98 percent said they used age to wean with 29 percent frankly acknowledging that lack of space was the primary factor for weaning. I tend to question those responses because few operations measure starter intake, so I struggle with how that many can say they use starter intake to determine when calves are to be weaned.

The Dairy Calf and Heifer Association gold standard is to double birth weight at the end of 2 months of age. The closest age measurement to 2 months in this survey was weaning age at 65 days. Both Holstein and Jersey heifer calves reached that goal. But postweaning daily gain for Holsteins declined from 1.61 preweaned to 1.32 pounds.

That indicates a major issue with the weaning transition period after full weaning. Jerseys did not show the same falloff, but there were only 114 Jerseys versus 2,273 Holsteins in this database (table).

There was a similar falloff for Holstein hip heights postweaning, but again not for Jerseys. As a reference point, hip heights are about 2 inches greater than wither heights.

Height indicates growth

As I found from a five-year Holstein database published in 1987 and 1988 in the *Journal of Dairy Science*, height gain is critical for the overall growth of Holstein heifers. The pattern should be that from birth to first-calving height, 50 percent should occur in the first six months, 25 percent in the next six months, and only 25 percent in the last 12 months. This height gain is biologically controlled primarily through growth hormone and is age-related just as in humans. As far as I have been able to determine, there is no compensatory growth in height at a later age if not made within these age periods.

During the first six months, withers height should increase about 2 inches per month. It is a make it or lose it situation. These data sets indicate Holstein heifer calves were not making weight and height benchmarks postweaning. That's most likely due to a poor postweaning transition program.

This survey provides invaluable U.S. data to illustrate how heifer calves are doing in their first 90 days. It spotlights opportunities for many dairy farms to improve postweaning weight and height gains. 🐄

Heifer growth metrics		
Item	Holsteins n=2,273	Jerseys n=114
Birth weight, lb	94.7	77.3
Weaning weight, lb	201.3	154.4
Daily gain, lb	1.61	1.12
90-day weight, lb	229	189.8
Daily gain postweaned, lb	1.32	1.69
Birth hip height, inches	32.6	29.8
Weaning hip height, inches	37.5	33.7
Inches/day	0.071	0.057
90-day hip height, inches	38.6	35.4
Inches/month	2.01	1.87

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